

Voice/Video over IP (VVoIP)
Datacenter Node Design Analysis
Based on Cisco 6504e Ethernet Switches

May 2012

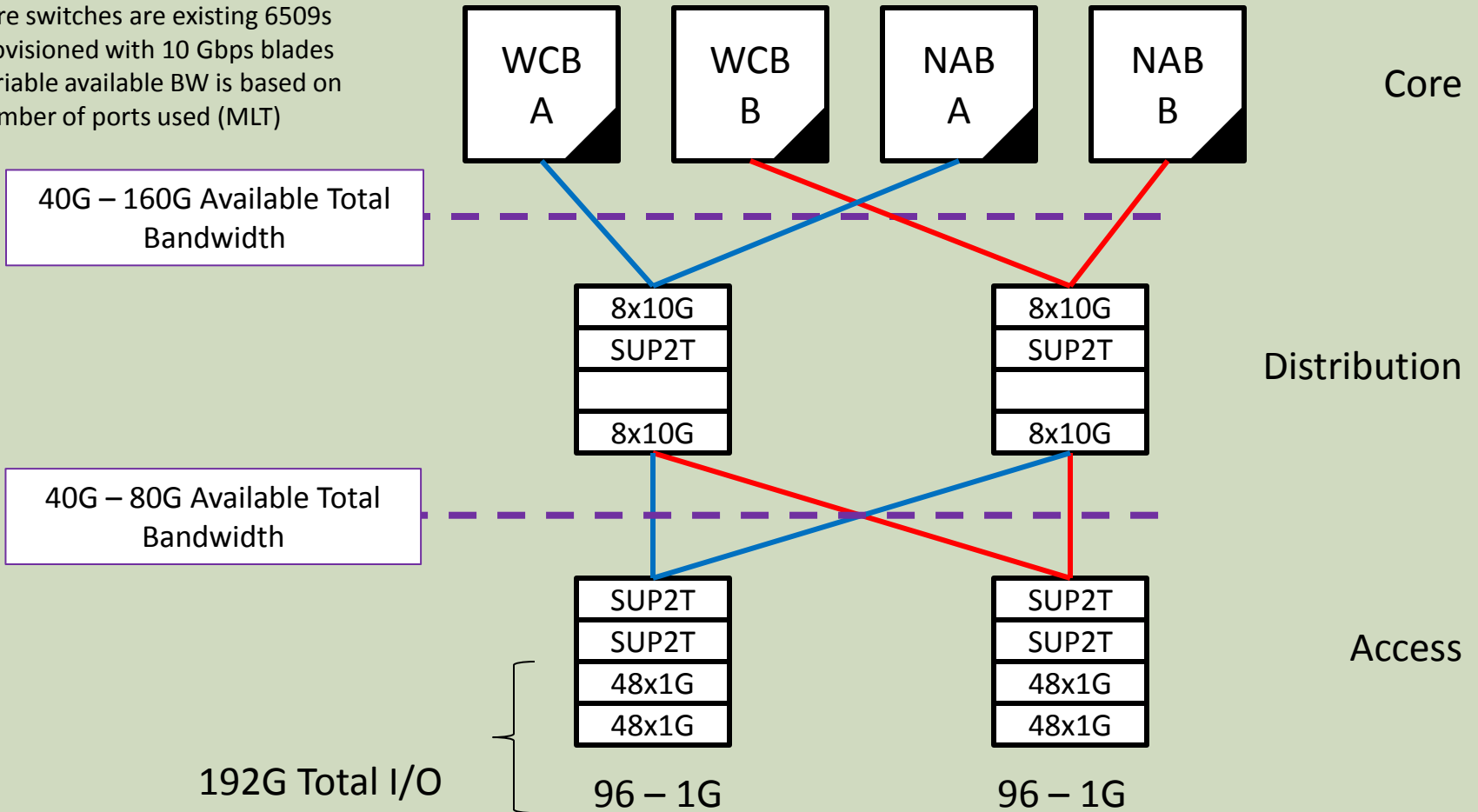
Project – Analyze a Data Center Node design with Cisco 6504e switches for video capacity and capability

- Analysis
 - Client was creating a new node in the datacenter for a VoIP program and wanted to understand if the investment was sufficient for future voice and video requirements
 - Analysis created 5 Node Models, including the initial configuration
 - Each configuration was analyzed for available bandwidth at each level
 - With 70% reduction for Ethernet utilization accommodation the final capacity in both voice and video was defined for each Node Model
- Conclusion
 - Proposed design was migrate-able to advanced video capacity
 - Customer could re-use modules from this node in other areas of an extensive network
 - All upgrades could be done during lower load times with no noticeable impact to overall service
 - Proposed design has capacity for all 20K employees to be on simultaneous voice calls (80 Kbps PCM or compressed HD audio)
 - Design can support up to 32K video conferencing sessions at 3 MBPS, or 16K video conferencing sessions and 50K surveillance cameras.
 - Separate voice and video access switches add little additional capacity

6504e Proposed Initial Design

Notes

1. Four 6504e switches with 4 ports each
2. Core switches are existing 6509s provisioned with 10 Gbps blades
3. Variable available BW is based on number of ports used (MLT)

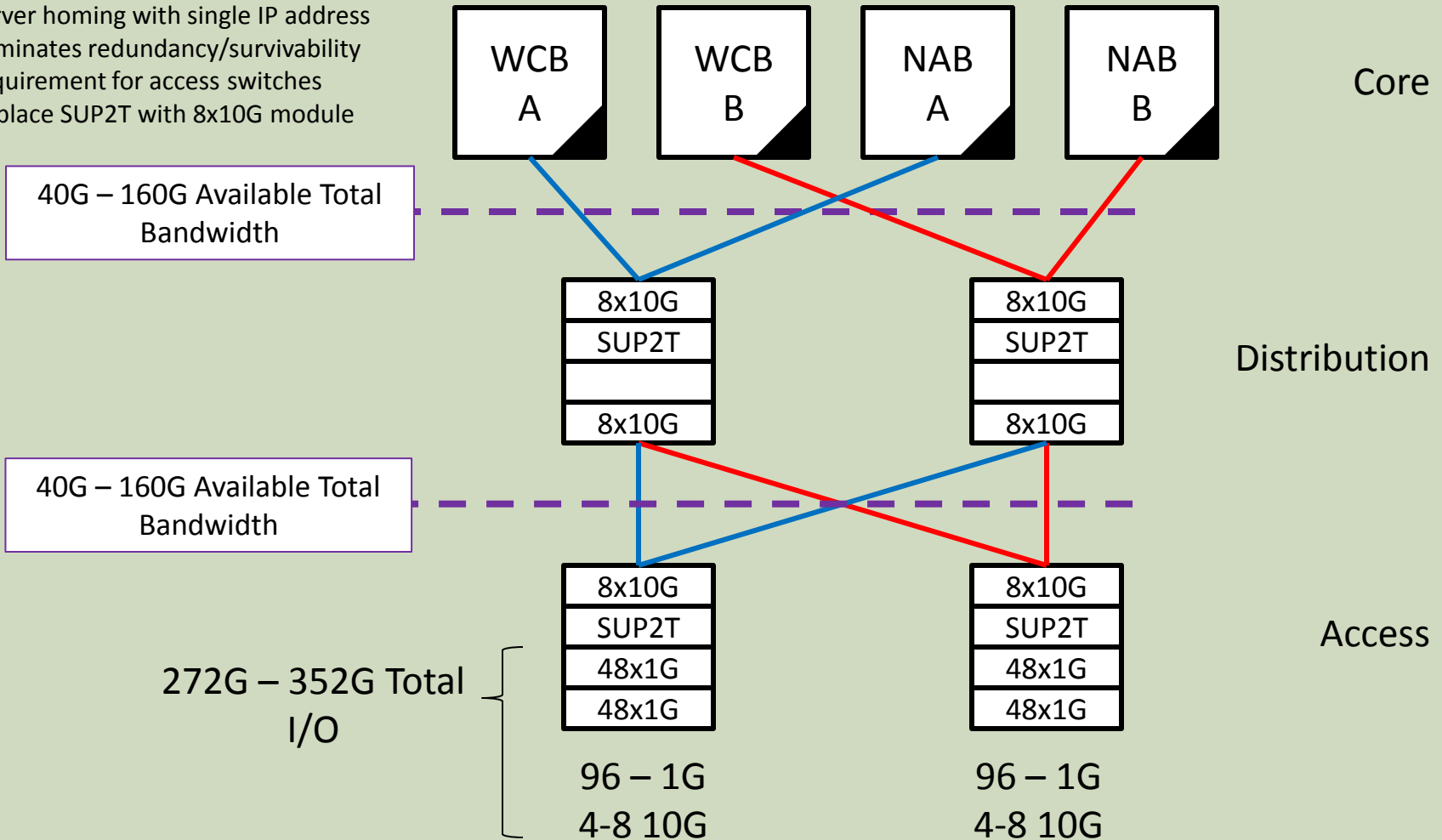


6504e Single SP2T Access Design

Assumes servers can be dual homed with single IP address

Notes

1. Remove second SUP2T module as dual server homing with single IP address eliminates redundancy/survivability requirement for access switches
2. Replace SUP2T with 8x10G module

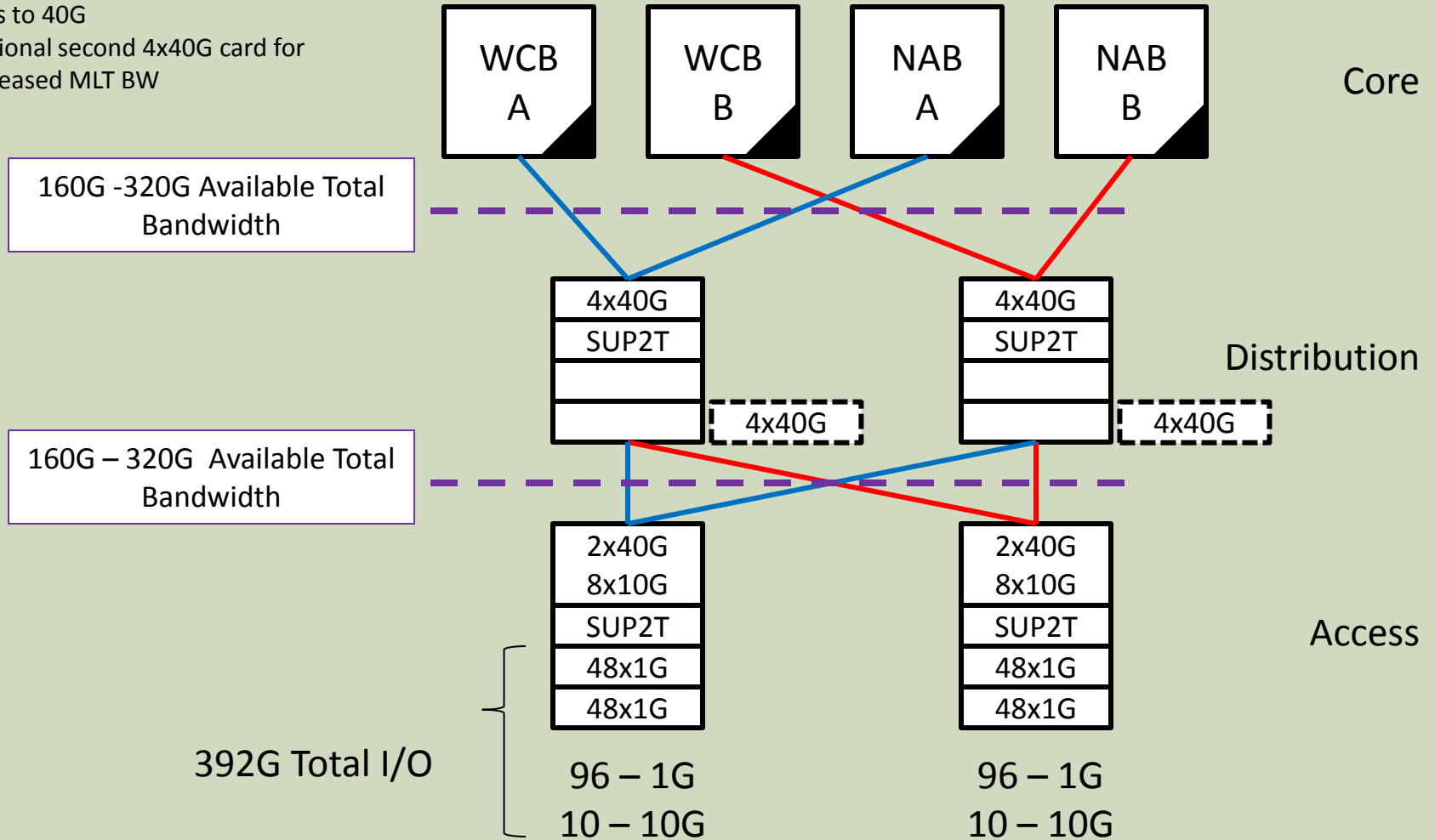


6504e with 40 G

Assumes Avaya servers can be dual homed with single IP address

Notes

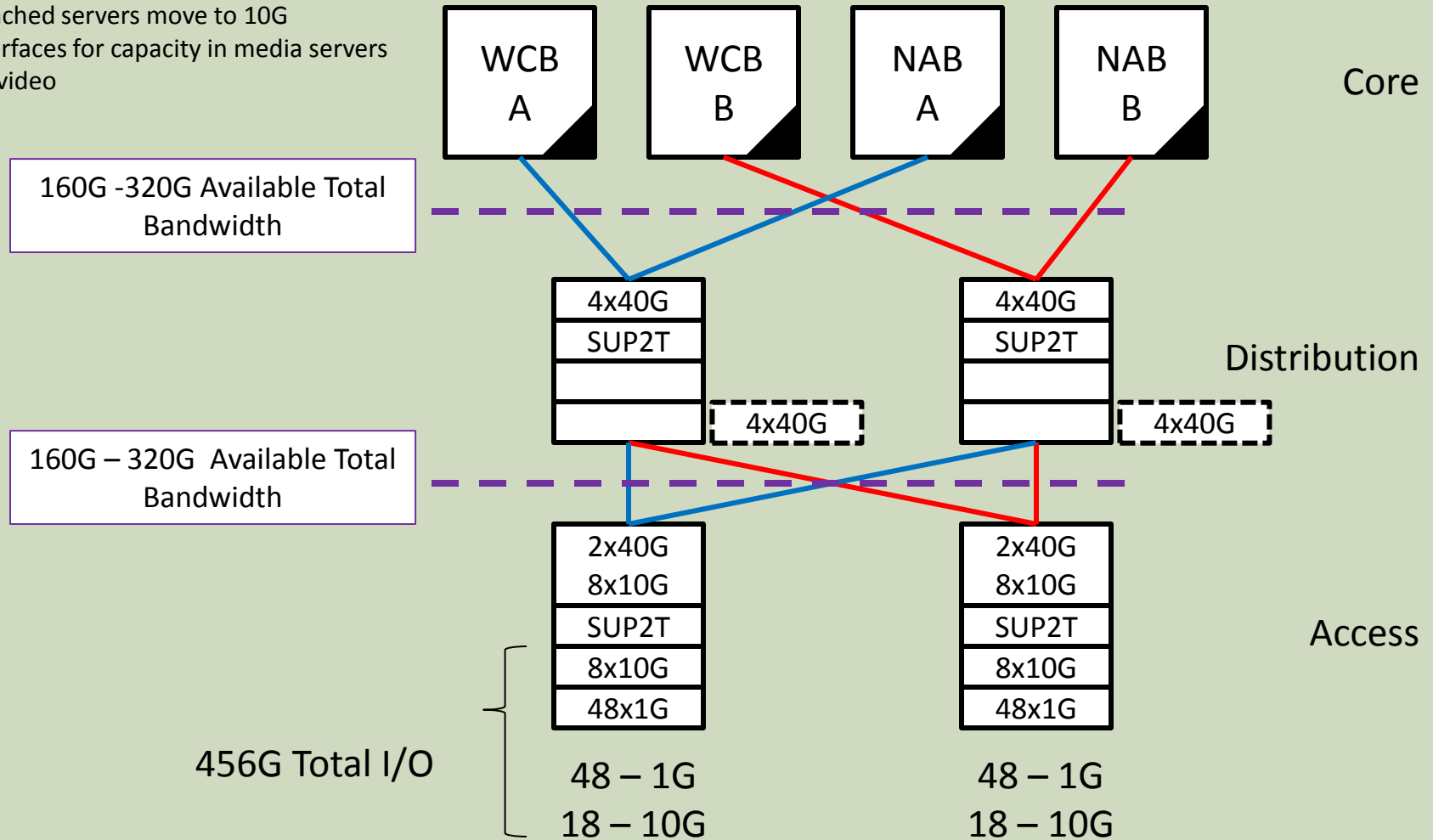
1. Upgrade core uplinks and Dist to Access links to 40G
2. Optional second 4x40G card for increased MLT BW



6504e with 40 G – Reduced to 48 1G Ports

Notes

1. Reduce 1G ports in Access layer as attached servers move to 10G interfaces for capacity in media servers for video



6504e to Voice/Video Design

Splits Voice and Video into Separate Access Switches

Notes

1. Install separate Access switches for video
2. 40G for video core, 10G for Voice core

